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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,342	12/20/2001	Katsuji Shibata	P21831	2581

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EXAMINER
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WYROZEBSKI LEE, KATARZYNA I

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/022,342	SHIBATA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Katarzyna Wyrozebski Lee	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0302</u> . | 6) <input type="checkbox"/> Other:  |

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Most of the claims currently pending contain limitation of "phosphoric acid - type compound". Use of term "type" renders claims indefinite, since it is not clear as to what exactly is the compound utilized in the composition.

Claims also contain limitation of "alcohol based solvent". It is also unclear as to what exactly is the solvent utilized. Term "based" encompasses only alcohol or -OH containing compounds such as diols, or mixtures of the two with another solvent, which can also be other than alcohol.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6 are rejected under 35 U.S.C. 102(a) as being anticipated by DURAND (US 6,573,304).

It should be pointed out that a recitation of the intended use of the claimed invention in claim 1 must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

The prior art of DURAND discloses composition utilized for recycling of polyester waste. The composition utilizes glycols, glycolysis catalyst and phosphoric acid.

According to Aldrich chemical catalog glycols utilized in DURAND have boiling point of 245°C for diethylene glycol, which is just one of the examples (col. 4, example I).

Phosphoric acid in DURAND is utilized to aid in transesterification and deactivation of catalyst (col. 3, lines 44-48).

The components just disclosed above are utilized to decompose PET, which contains aromatic unsaturation, and which is obtained from consumption waste (col. 1, lines 9-10).

Although the prior art of DURAND does not specifically disclose that the PET is cured, one of ordinary skill in the art would understand that all PET products on the shelf that are used and become post-consumer waste are crosslinked or otherwise cured in order to make them durable.

In the light of the above disclosure, the prior art of DURAND anticipates requirements of the claims rejected above.

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5. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by BARKEY (US 3,488,298).

Just like in the paragraph 4 above the prior art of BARKEY discloses process for depolymerization of polyester waste. Reaction products are utilized to form new polyester. Compounds utilized in recycling of the polyester include alcohol solvents such as methanol or ethylene glycol (Table I) and phosphorus compound such as phosphoric acid. In this example, the purpose for utilizing phosphoric acid is deactivation of the glycolysis catalyst and esterification aid (col. 3, lines 9-30). As mentioned earlier, ethylene glycol has boiling point of 245°C.

In the light of the above disclosure, the prior art of BARKEY anticipates requirements of claims rejected above.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 12, 13, 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over DURAND (US 6,573,304) in view of CURRIE (US 3,907,868).

The discussion of the disclosure of the prior art of DURRAND from paragraph 4 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of DURRAND is discussion of the solids or fillers present in the waste polyester and their separation from the liquid medium as well as recitation of atmospheric pressure.



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With respect to the above argument, the prior art of CURRIE discloses another process of decomposing polyesters with glycols such as ethylene glycol.

The prior art of CURRIE discloses that during recovery process for PET, which contains additives or fillers as small particulates are flocculated after the esterification. They are separated from the reaction medium using separator (col. 5, lines 52-66).

The process of CURRIE is conducted at atmospheric pressure and temperature range of 210-260°C (col. 6, lines 45-50).

Removal any sort of additives or fillers from the waste polyester reaction medium allows one of ordinary skill in the art to obtain pure reaction product. In addition utilizing atmospheric pressure, as long as proper temperature is maintained does not adversely affect decomposition process.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to remove the additives or fillers from polyester waste as it was disclosed in CURRIE and apply that particular step in the process of DURAND. Removing of additives results in reaction product that is pure.

10. Claim 2-11, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over DURAND (US 6,573,304) in view of CURRIE (US 3,907,868) as applied to claims 1, 12, 13, 17-21 above, and further in view of BARKEY (US 3,488,298).

The discussion of the disclosure of the prior art of DURAND and CURRIE from paragraph 9 of this office action is incorporated here by reference.

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The difference between the present invention and the disclosure of the prior art of DURAND and CURRIE is recitation of other phosphates that can be utilized in the decomposition process.

The prior art of BARKEY discloses process for depolymerization of polyester waste. Reaction products are utilized to form new polyester. Compounds utilized in recycling of the polyester include alcohol solvents such as methanol or ethylene glycol (Table I) and phosphorus compound such as phosphoric acid. In this example, the purpose for utilizing phosphoric acid is deactivation of the glycolysis catalyst and esterification aid (col. 3, lines 9-30). As mentioned earlier, ethylene glycol has boiling point of 245°C.

The prior art of BARKEY discloses in col. 3, lines 10-15 alkyl phosphates as the compounds that can be utilized in the decomposition process. Both salt of phosphoric acid and phosphates are functional equivalent.

Utilizing salts of phosphoric acid such as phosphates in decomposition medium of BARKEY would still results in deactivation of the glycolysis catalyst and esterification, since they are functional equivalent with the alkyl phosphates.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize phosphate salts in the process of DURAND and CURRIE and thereby obtain the claimed invention. The solution would still efficiently decompose waste polyester.

11. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over BARKEY (US 3,488,298).



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In addition to the disclosure in paragraph 5 of this office action, the prior art of BARKEY renders obvious use of salts of the phosphoric acid. The prior art of BARKEY discloses in col. 3, lines 10-15 alkyl phosphates as the compounds that can be utilized in the decomposition process. Both salt of phosphoric acid and phosphates are functional equivalent.

Utilizing salts of phosphoric acid such as phosphates in decomposition medium of BARKEY would still results in deactivation of the glycolysis catalyst and esterification, since they are functional equivalent with the alkyl phosphates.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize phosphate salts as functional equivalents and thereby obtain the claimed invention. The solution would still efficiently decompose waste polyester.

12. Claims 11-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over BARKEY (US 3,488,298) as applied to claims 1-10 above, and further in view of CURRIE (US 3,907,868).

The discussion of the prior art of BARKEY from paragraph 11 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of BARKEY is discussion of the solids or fillers present in the waste polyester and their separation from the liquid medium as well as recitation of atmospheric pressure.

With respect to the above argument, the prior art of CURRIE discloses another process of decomposing polyesters with glycols such as ethylene glycol.

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The prior art of CURRIE discloses that during recovery process for PET, which contains additives or fillers as small particulates are flocculated after the esterification. They are separated from the reaction medium using separator (col. 5, lines 52-66).

The process of CURRIE is conducted at atmospheric pressure and temperature range of 210-260°C (col. 6, lines 45-50).

Removal any sort of additives or fillers from the waste polyester reaction medium allows one of ordinary skill in the art to obtain pure reaction product. In addition utilizing atmospheric pressure, as long as proper temperature is maintained does not adversely affect decomposition process.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to remove the additives or fillers from polyester waste as it was disclosed in CURRIE and apply that particular step in the process of BARKEY. Removing of additives results in reaction product that is pure.

Additional prior art found during search, pertinent but not applicable for date purposes is US 2002/0177636 to KAWAMURA et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Katarzyna Wyrozelski*  
KIWL

September 17, 2003